

REMARKS

Claims 1-24 are pending. Claims 1-16 have been amended. Claims 1, 5, 9, 13 and 21-24 are the independent claims. Claims 17-24 have been added. Favorable reconsideration is respectfully requested.

Claims 1-8 were rejected under 35 U.S.C. § 102(e) over U.S. Patent Publication No. 2005/78659 (Smith et al.). Claims 9-16 were rejected under 35 U.S.C. § 103 over Smith et al. in view of U.S. Patent 6,970,614 (Tsushima et al.). Applicant submits that the independent claims are patentable over the cited art for at least the following reasons.

I. Patentability of Amended Independent Claims 1, 5, 9 and 13

Amended independent claim 1 is directed to an optical network which is formed by a plurality of optical network transmission apparatuses and a plurality of transmission lines that connect the optical network transmission apparatuses. Each optical network transmission apparatus comprises: advertisement means for autonomously advertising an addable wavelength and a droppable wavelength in a transmission line connected to the apparatus, and collection means for autonomously collecting an addable wavelength and a droppable wavelength in a transmission line that is advertised by another apparatus. The plurality of optical network transmission apparatuses cooperate together to form a usable path determined from shared information that has been advertised and/or collected by the optical network transmission apparatuses of the network.

An optical network transmission apparatus such as OADM (Optical Add Drop Multiplexer) may sometimes have limitations or restrictions that are different between an addable wavelength and a droppable wavelength depending on settings. However, if control is performed based only on wavelength, as in Smith et al., those wavelengths that are not available for either transmission or reception in a certain apparatus must be handled as being unavailable for both transmission and reception, thus substantially hampering an efficient use of the wavelength or band resource.

On the other hand, in amended independent claim 1 a usable wavelength of each apparatus is advertised by dividing it into an addable wavelength and a droppable wavelength. This allows a start node to use an addable wavelength thereat for calculation of a route that can reach an end node, thus allowing for efficient use of a wavelength resource. This is supported in the specification at, e.g., page 11, line 17 through page 12, line 4.

In view of the foregoing, it is believed clear that amended independent claim 1 is patentable over the Smith reference. Amended independent claims 5, 9 and 13 also recite substantially similar features and are believed patentable for substantially similar reasons. Tsushima et al. does not remedy the above-mentioned deficiencies of Smith as a reference against independent claims 1, 5, 9 and 13.

II. Patentability of New Independent Claims 21-24

New independent claim 21 is directed to an optical network which is formed by a plurality of optical network transmission apparatuses and a plurality of transmission lines that connect the optical network transmission apparatuses. Each optical network transmission apparatus includes advertisement means for autonomously advertising a usable wavelength in a transmission line connected to the apparatus, and collection means for autonomously collecting a usable wavelength in a transmission line that is advertised by another apparatus. The plurality of optical network transmission apparatuses cooperate together to form a usable path determined from shared information that has been advertised and/or collected by the optical network transmission apparatuses of the network. In calculating a path, the shared information that has been advertised and collected by the various nodes of the network are used to create a path, such that a source apparatus in the determined usable path knows, from the shared information it has collected, that the usable path will not fail due to apparatus limitations.

On the other hand, Smith et al. creates a path by a source node sending out a request message R, which has a label list that is sent to the first cross-connect. The first cross-connect compares this label list with a label availability table associated with the first cross-connect. Then

the first cross-connect compares its label availability table to the label list from the source node to create an intersection set. See paragraph [0032]. The intersection set thus obtained is then inserted into the request message R as a reduced label list and the request message R is then forwarded to the second cross-connect. These steps are repeated until either the message reaches the source node, or until the label list is reduced to zero (i.e., becomes empty). If the label list in the message is found to be empty, a request rejection message is sent back to the source indicating a failure, i.e., no wavelengths are available for an end-to-end path.

In Smith's system, because of the way Smith creates a path, an attempt to create the path may fail, i.e., if the label list becomes empty. On the other hand, in the technique of claim 21, a source node in the usable path will know beforehand, based on information it has collected, that the path it chooses will not fail, in view of the fact that a usable path is determined from the shared information that has been advertised/collected by the nodes of the system.

For at least this reason, new independent claim 21 is believed patentable over the cited art. New independent claims 22-24 also recite substantially similar features to claim 21 and are believed patentable for similar reasons. Tsushima et al. does not remedy the above-mentioned deficiencies of Smith as a reference against independent claims 21-24.

The dependent claims are believed patentable for at least the same reasons as their respective base claims.

In view of the above amendments and remarks, applicant believes the pending application is in condition for allowance.

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